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Derbyshire County Council.

SCHEME for the
TREATMENT & PREVENTION

— OF —

TUBERCULOSIS

INCLUDING A

REPORT on the DERBYSHIRE SANATORIUM

BY

W. C. FOWLER, M.D., B.Sc. (Lond.),

AND A

REPORT on the DERBYSHIRE DISPENSARIES

BY

B. S. NICHOLSON, M.B., C.M. (Edin.).

SIDNEY BARWISE, M.D., B.Sc.,

County Medical Officer.

OCTOBER, 1916,



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Derbyshire Tuberculosis Scheme.



Up to the present time the provision we have made for treating cases of tubercle, consists of a Sanatorium of 100 beds and 10 shelter beds, and we have 16 beds for advanced cases at the Chesterfield Joint Isolation Hospital. In addition to these, dispensaries have been provided at Chesterfield, Chinley, Derby, Glossop, Ilkeston, Long Eaton, and Matlock, and we have entered into a contract with the Burton-on-Trent Corporation for cases residing in the County on the south side of the river Trent to be treated at their dispensary.

As I am constantly pointing out, the problem of Tuberculosis is essentially a housing problem. In an overcrowded house which is ill-ventilated where there is one case of Tuberculosis, it is impossible for other inmates not to become infected. For this reason every encouragement is given to patients, especially those who are shedding tubercle bacilli, to continue their open-air treatment at home after they leave the Sanatorium. To enable them to do this the Tuberculosis Committee provide them with shelters where there is room for them to be erected near the house. Altogether 230 such shelters have been provided. Speaking generally, they are used properly and are appreciated.

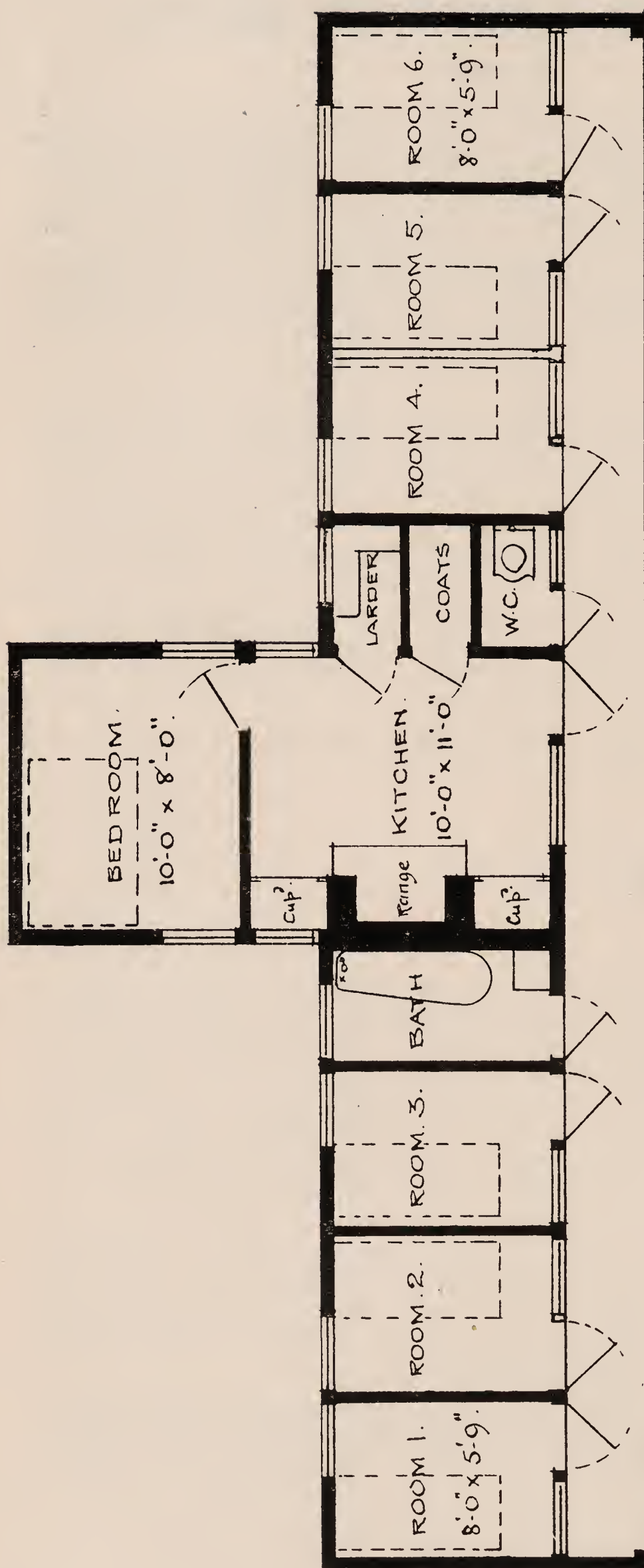
The total cost of the shelters, with equipment and necessary carting during the year, was as follows:—

	£	s.	d.
Shelters	1,450	5	0
Repairs, carting and erection	183	1	2
Beds and bedding	575	17	5
	<hr/>		
	£2,209	3	7

When we remember that it is necessary to continue living in the open for years, I hope that before long, by voluntary effort, we shall see provided in every district rows of single cubicles in which patients suffering from Tuberculosis can live while they are still at work. Such an arrangement would be more satisfactory than shelters and the cost would be comparatively small. I am certain that single living rooms with through ventilation could be provided to let at one shilling a week. See plate, page 34.

Again, after the war, housing schemes will have to be carried out throughout the whole country. In the future workman's cottage a coal-place and w.c. should be provided with a flat roof, so that a shelter might be erected on the top of it with access from upstairs, for the open-air treatment of cases of Tuberculosis or the isolation of infectious disease.

Where a shelter cannot be provided the Tuberculosis Committee have paid for the window being taken out and for a screen being erected over the window to prevent the rain beating in, as shown in the sketch below.

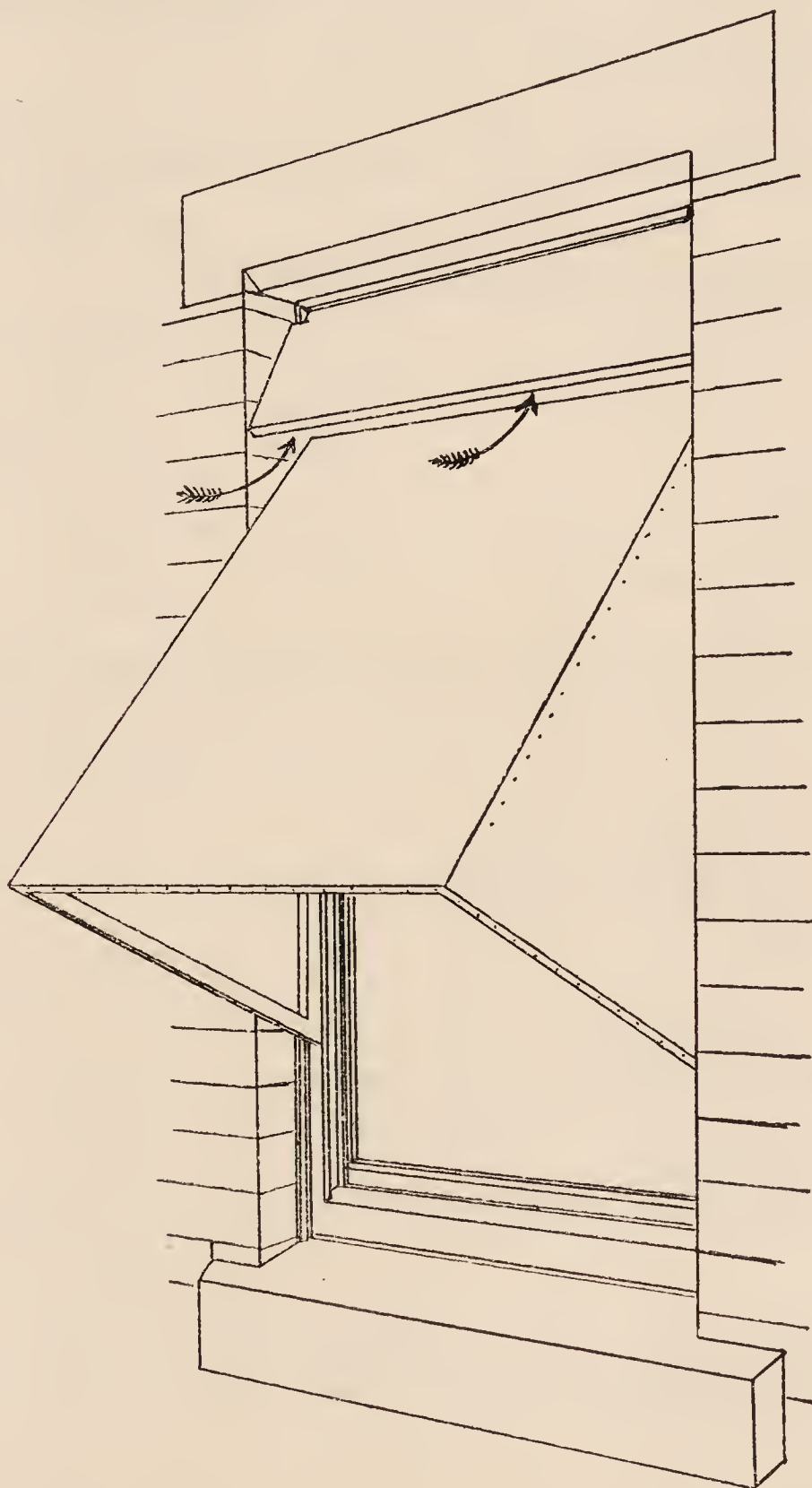


PLAN OF
SIX CUBICLES FOR CONSUMPTIVES.

SCALE, 1 INCH = 8 FEET.

(See page 33.)

An essential part of our preventive scheme is the visit of the health visitor to the homes of notified cases. The health visitor explains the necessity for the patient living in the open air, not only for his own benefit but for the protection of the other members of the house. She explains the necessity of not coughing without holding something in front of the mouth, and demonstrates the proper means of disposing of the sputum. If the case is an ambulatory lung case she sees that a sputum bottle is provided and that a specimen of the sputum is sent to the Laboratory for bacteriological examination. She explains the necessity for the patient sleeping in a room without a carpet, so that the floor if infected can be easily disinfected. A copy of the leaflet "Hints on Consumption" is left and gradually the patient is taught to understand that his chances of improvement depend upon his willingness to exercise self-discipline.



Canvas Screen fixed over window, all glass being removed.

Board above to let air in at top.

DERBYSHIRE SANATORIUM.

MEDICAL SUPERINTENDENT . W. C. FOWLER, M.D., B.S., LOND.

The County Sanatorium was opened at the end of March, 1915. Dr. W. C. Fowler was appointed Medical Superintendent, and Dr. Josephine Ahern as assistant. The Sanatorium was fully described in the report for last year. Since its opening, however, two large sheds have been erected as workrooms and store houses, one for men and the other for women. Dr. Fowler has prepared an instructive report on the work done during the year, from which the following particulars are taken:—

A good deal of the available land has been already used for vegetable cultivation or prepared for sowing, and recently about an acre in the men's field and about half an-acre in the women's field has been ploughed for cultivation.

In the lighter parts of these operations the patients get a good deal of healthy exercise which is of distinct therapeutic value.

PATIENTS.—From March 22nd, 1915, to December 31st, 1915, the following were admitted and discharged:—

	Insured.	Non-Insured.	Total.
Admitted	169	90	259
Re-admitted	1	1	2
Discharged	138	69	207
Remaining in Sanatorium ...	32	22	54

The completed cases may be divided into groups thus:—

	Insured.	Non-Insured.
<i>Completed Treatment</i> —Lungs	111	59
Re-admitted for completion of treatment	1	0
Bone and Joint	3	1
Glands	1	2
„ Re-admitted	0	1
Non-Tubercular (sent in for diagnosis) ...	1	2
<i>Left before one month</i>	14	3
<i>Sent out as unsuitable</i>	6	1
<i>Sent to Hospital</i> (Appendicitis)	1	0
	138	69

LENGTH OF STAY.—This is a matter which depends upon the individual requirements of each case.

As a guiding rule, however, a patient should stay at least a month for educational purposes whether curable or otherwise.

Towards the end of this period the cases can usually be divided up as follows:—

1. Cases in which cure or at least arrest and return to work can be expected within six months. This class should stay at least three months, the home conditions determining whether a longer stay is advisable.
2. Cases in which, while no cure or complete arrest can be expected, there is a reasonable prospect of their return to light work within six months. This is the most difficult class to deal with, and sometimes leads to disappointment, a temporary improvement during the first month or two raising hopes which subsequently are lost.
3. Cases in which no more than temporary benefit can be expected, but which, from their highly infectious nature, it is most desirable to educate. For these one month's stay is sufficient, especially if a shelter can be provided for them when they return home.

Of the 205 cases referred to (excluding two re-admissions) the average length of stay was 65 days. The following table gives the number of patients who stayed one, two or three months:—

Less than one month	...	...	...	20
One month	...	...	...	27
Two months	...	...	...	34
Three months	...	...	...	96
Over three months	...	...	...	28
The longest stay	...	...	...	165 days.

RESULTS.—These of necessity when reduced to figures are liable to be misleading, because of the difficulty in standardising the class of case admitted. An attempt, shown below, to do this, proves how much the results depend upon cases being admitted in the earlier stages.

PULMONARY TUBERCULOSIS.

A separate classification of the results has been made to show:

- (1) General improvement in patient (as a whole);
- (2) Local improvement, i.e., in the lungs, as shown by physical examination, sputum, etc.

	Completed Treatment	Much Improved.	Improved.	Station- ary.	Worse.	Dead.	Total.
General	171	121	36	7	5	2	171
Local ...	171	80	44	32	13	2	171

GLANDULAR TUBERCULOSIS.

Dr. Fowler removed glands in three cases with the result that one was improved and two were completely cured.

BONE AND JOINT CASES.

Four bone and joint cases also received surgical treatment, of which two were cured and one improved.

I.—STAGE OF DISEASE ON ADMISSION.

		Much Im- proved.	Im- proved.	Station- ary.	Worse.	Dead.	Totals.	Percentages Much Improved.
Turban I.								
General	...	53	11	0	0	0	64	83
Local	...	42	16	6	0	0		65.5
Turban II.								
General	...	44	16	3	0	1	64	70
Local	...	25	18	14	6	1		40
Turban III.								
General	...	15	5	3	1	0	24	62
Local	...	5	8	7	4	0		21
Lungs & Larynx-								
I. II., III.,								
General	...	9	4	1	4	1	19	47
Local	...	8	2	5	3	1		42

II.—EFFECT OF STAGE OF DISEASE ON WORKING CAPACITY AT TIME OF DISCHARGE.

		None.	Light Exercise only.	Light Work and Exercise.	Moderate Work.	Heavy Work.
Turban	I.	0	6	27	19	16
Stage	II.	4	9	35	19	8
	III.	6	4	10	8	0

PRESENT CONDITION OF PATIENTS DISCHARGED UP TO DECEMBER 31st, 1915.

Dr. Fowler points out that the most important points in sanatorium treatment are: (1) To restore the working capacity; (2) To teach the patient how he may keep well and avoid being a danger to others.

With regard to the first, the following statistics collected at the end of March, 1916, show the present condition of all the patients discharged by December 31st, 1915. They are divided up into their Turban Stage groups for the purpose of comparison.

PULMONARY CASES.

STAGE I. 68 completed treatment

At the end of March 1916: 48 working = 72%
 17 not working.
 2 died (of other complaints).
 1 lost sight of (left the County).
 —
 68
 =

STAGE II. 74 completed treatment.

At the end of March, 1916: 41 working = 57·7%
 26 not working.
 2 lost sight of (left the County).
 5 dead (1 committed suicide).
 —
 74
 =

STAGE III. 27 completed treatment.

At the end of March, 1916: 6 working = 22·2%
 17 not working.
 4 dead.
 —
 27
 =

GLAND CASES.

3 completed treatment—3 working.

BONE AND JOINT CASES.

4 completed treatment—3 working.
 1 not working.
 —
 4
 =

SUMMARY :—

179 cases—all kinds.
 110 working = 63·5% (corrected percentage).
 99 improved.
 43 stationary.
 20 worse.
 11 dead (1 suicide).
 3 lost sight of (left the County).
 3 non-tubercular cases—all working.

These results, when patients of the same stage of the disease are considered, compare favourably with the results obtained in other parts of the country.

APPENDIX.

Showing cases discharged between December 31st, 1915, and March 22nd, 1916.

The detailed results of these will be included in the report for 1916, and are therefore only briefly mentioned here.

Of the total of 44 insured and 26 non-insured, 56 completed treatment.

Of the remaining 14,

- 4 left before one month ;
- 3 were found to be non-tubercular (sent in for observation) ;
- 3 were sent to Penmore as unsuitable;
- 1 sent to General Hospital suffering from pernicious anæmia ;
- 1 died of acute bronchitis and emphysema ;
- 2 bone and joint cases for surgical treatment.

Totals for year ending March 22nd, 1916 :—

	Insured.		Non-Insured.	
	Men.	Women.	Men.	Women.
Admitted	.. 127	87	34	88
Re-admitted	.. 3	0	1	0
Discharged	.. 112	68	28	68
Remaining	.. 18	19	7	20

NUTRITION.

The system of graduated work and exercise makes the increase in weight of a patient a much more reliable guide to his general improvement than would be the case if the patient had been kept at rest.

If he has been able to gain weight while working, he is more likely to maintain his improved weight after discharge.

Of the 169 patients who completed treatment, 91 gained up to 10 lbs. in weight, 66 gained 10-20 lbs., 6 gained over 20lbs. in weight.

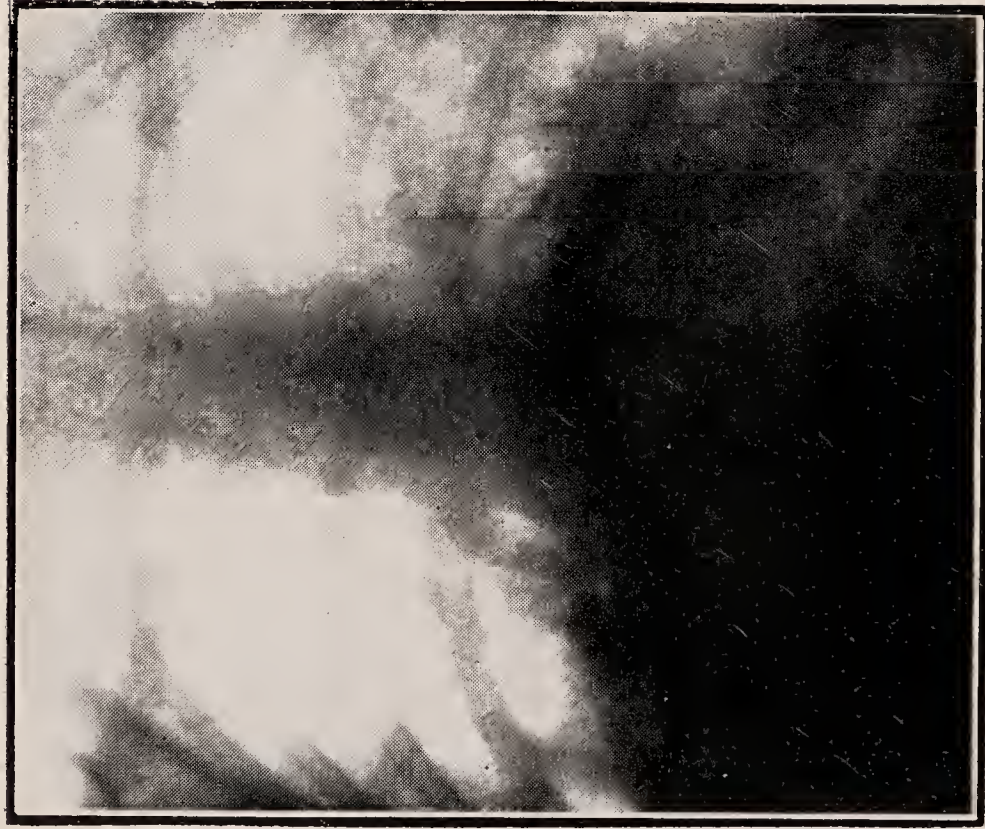
RESULTS OF SPUTUM EXAMINATION.

The sputum is examined on admission and before discharge.

In nearly every case the effects of treatment were shown in a considerable diminution of the amount of sputum, while 27 patients lost it altogether. Of these 27, 10 contained tubercle bacilli on admission and 17 were negative, while the sputum of four other patients was positive on admission but negative on discharge.

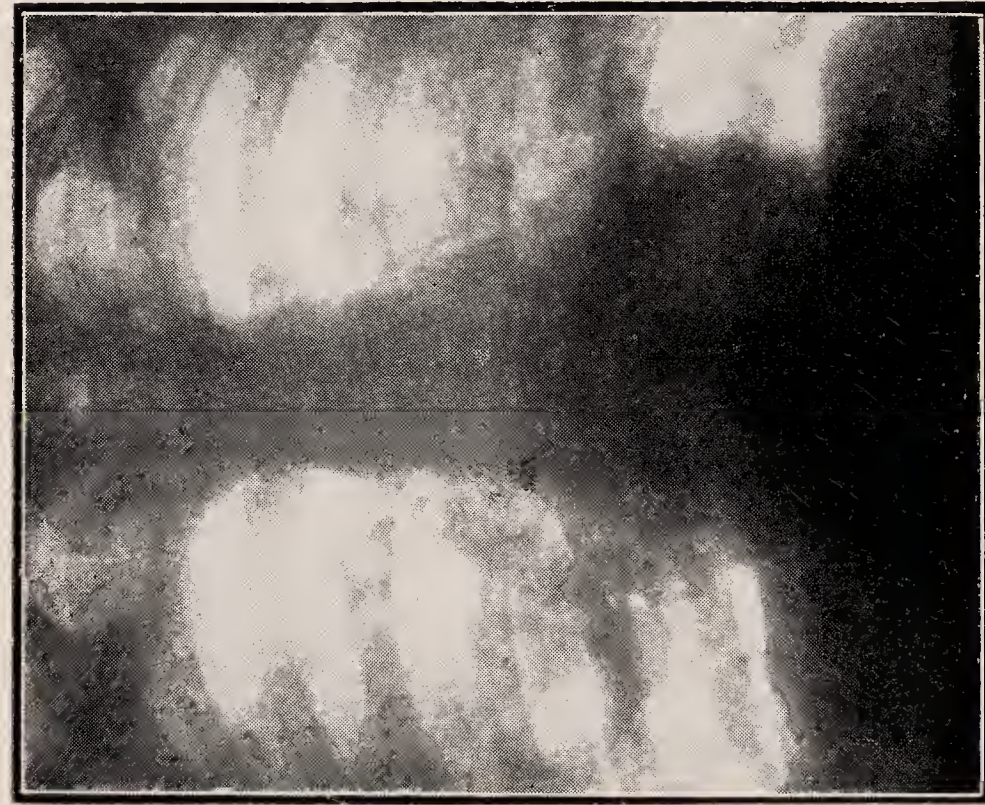
TUBERCULIN.

This has been given systematically to all those patients who were considered suitable from a clinical point of view, and it has the great advantage of being much more exactly controlled in a Sanatorium than is possible outside. The result is that severe reactions are avoided and the confidence of the patient is built up.



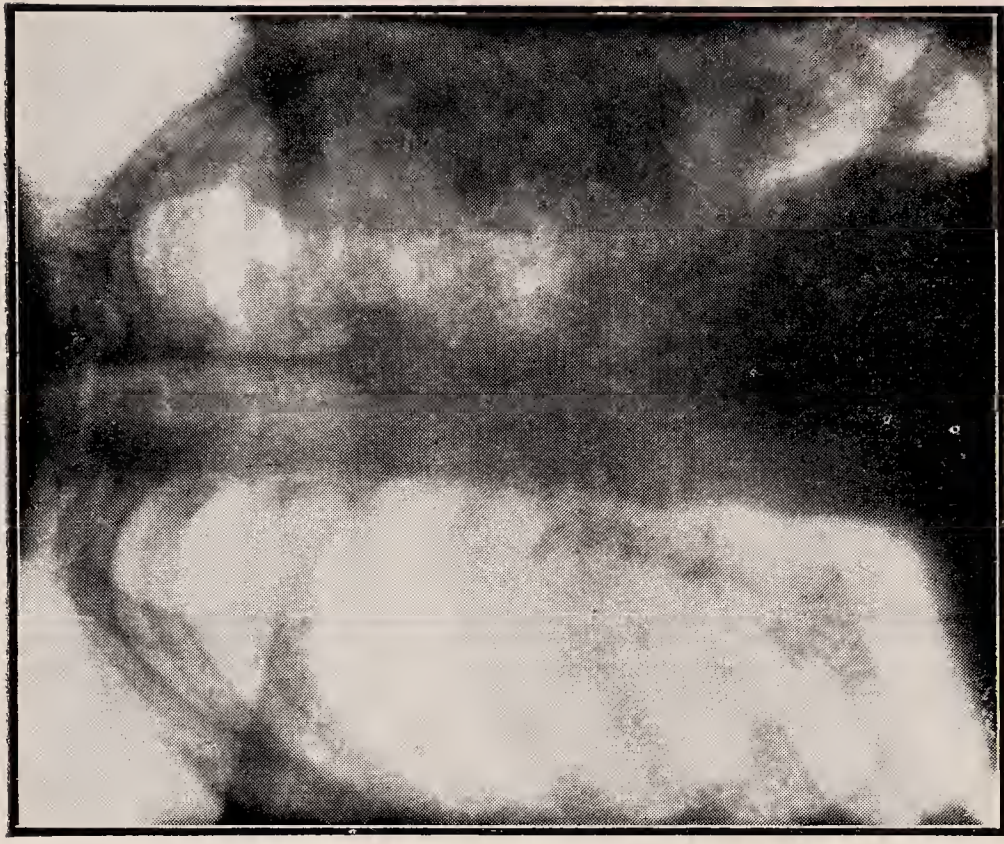
R. FIG. 1. L.
 Case: Mrs. L.M. aet. 27.

Physical signs found at right base only. Note the extensive patches of deposit just above the heart on the left side. Sputum positive.



R. FIG. 2. L.
 Case: J.K. aet. 17.

Physical signs repeatedly negative for a month after this was taken. Later a few crepitations appeared in the region of the vertebral border of the left scapula. Sputum positive.



R. FIG. 3. L.
 Case: J.L.C. aet. 16.

Repeated physical examinations failed to reveal the marked deposits in the left lung. Sputum positive.

Up to December 31st, 163 patients out of 205 received injections, but seeing that the cases were specially selected for that purpose, it would be misleading to compare the results obtained with those who did not receive it, as the latter are mostly the febrile and unfavourable type, whose autoinoculation from their own focus of infection is already providing them with more of the equivalent of tuberculin than they can deal with.

TEETH.

Many patients that were admitted had very bad teeth, the mouths of some being in so septic a state that the results of treatment if the teeth were left alone would have been entirely counteracted. 128 patients required extractions—some a single stump, others as many as 15. Two refused treatment and were on that account not kept longer than one month. This dental work takes up a great deal of Dr. Fowler's time, and there is no doubt that a dental officer will have to be appointed for the Sanatorium. I receive the same report from the Tuberculosis Officers in charge of the dispensaries. There is ample scope for the whole-time service of a dental surgeon in looking after the teeth of the patients at the Sanatorium and attending the various dispensaries.

SURGICAL WORK.

Dr. Fowler performed one major and several minor operations; among the latter three cases of deflected nasal septum were treated by submucous resection.

COMPLICATIONS.

It is a noteworthy fact that no case of severe hæmorrhage occurred, although most patients reached the working stages. This has been noted often in other sanatoria and must be attributed to the open air and regulated life.

RADIOGRAPHIC WORK.

The X-ray installation has been of the utmost value in many cases in clearing up the diagnosis and also in determining the progress of some cases in which the scarcity of physical signs did not seem to coincide with the symptoms. Many cases which would otherwise be labelled as early or slight are found by X-raying to be more advanced—a fact which influences the treatment and especially the kind of work which the patient is advised to take up on discharge.

The accompanying reproductions from negatives shows the fact that extensive deposits may almost or entirely escape detection by ordinary methods, however carefully carried out. The physical signs, indicated in the descriptions below the pictures, are based upon the findings of two or more observers with ample opportunity for careful search, and it may be added that after seeing the X-ray pictures, re-examination of the patient confirmed the impression that ordinary clinical signs did not reveal the true condition.

A number of other similar cases have occurred since the above were taken.

LECTURES.

Apart from the educational effect of the treatment and routine, it is of great value to the patients to know the elementary facts about infection, etc., and Dr. Fowler gives a lecture once a week alternately in the men's and women's pavilions. The subject is divided up into a series of three lectures whose headings are roughly speaking: I.—Mode of Infection, II.—Prevention, III.—Cure.

Considerable interest has been shown and sustained in these lectures.

LECTURES ON COOKING.

The Education Committee have allowed one of their teachers of cookery to attend each week and give practical demonstrations on the preparation of food for consumptives to all the women patients. As the patients all change about every three months, at the end of that time the course is started again and continued throughout the year. The Committee have, with the help of Miss Sinclair, one of the Education Committee's cookery experts, brought out a small book entitled "Diet for Consumptives." There is a great prejudice in this country against the use of many excellent articles of diet such as lentils and nut butter. The demonstrations given, speaking generally, are on the preparation of appetising food of the cheapest and most neglected types. When the patients have heartily enjoyed a dinner, it is the best kind of education to take them and give them a practical demonstration how to prepare the same meal for themselves when they get home. The patients on leaving the Sanatorium have the opportunity of taking with them a book of recipes showing how to prepare meals similar to those that they have had whilst they were in the Sanatorium, and which they have been shown how to cook.

DERBYSHIRE SANATORIUM. TABLE XIII.

ANALYSIS OF EXPENSES YEAR ENDING MARCH 31st, 1916.

Average daily number of Patients—Insured .. 39·58 Uninsured .. 22·97 Staff 24·7									
62·55									
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Work done at Tuberculosis Dispensaries.

Dr. Nicholson has prepared the following Summary of the Work done at the various Dispensaries.

Total cases attending dispensaries	...	...	...	1644
(1914) Old cases	...	...	430	
(1915) New cases	...	...	1214	
Insured persons attending (passed by Insurance Committee)	...	...	...	488 or 29.6%
<i>Age Incidence.</i> 816 or 40.9% of the cases were amongst children under the age of 15 years, <i>e.g.</i> , of *school age, or under.				
Classification of cases (a) † Tuberculosis, Pulmonary	...	...	980	
Tuberculosis, Not-Pulmonary	...	...	265	
(b) ‡ Observation cases	...	...	321	
Cases not Tubercular	...	...	78	
Total				1644

Classification of cases (Pulmonary) according to stage of disease ("Turban" classification).

Stage I.	Stage II.	Stage III.	Total.
593	264	123	980

Sputum Examinations totalled 625 or 63.7% of Pulmonary cases, of these 282 or 45.1% were Positive.

There were 265 non-Pulmonary cases, of which 139 or 52% were Tubercular glands; 38 joint cases; 22 bone cases; 10 skin cases; 11 abdomen cases; 8 Tuberculosis of the eye; 6 the Larynx; 6 the Pleura.

Cases treated by tuberculin ... 676
or 54.3% of 1245 cases accepted for treatment at Dispensaries.

* This figure emphasises three or four points: (a) The prevalence of Tuberculosis amongst the young. (b) The need for careful investigation of all contacts. (c) The need for isolation of children from "open" cases of Pulmonary Tuberculosis. (d) The need for "open-air" schools for such children.

† (a) All the cases except Non-Pulmonary are tabulated at Chinley under this heading. Notice was not taken of observation cases at all; the figure is therefore too high.

‡ (b) This figure is too low for reasons stated above.

Condition of Patients at end of year.

Fit for work or attend school	...	582
Arrested	... ..	139
Improved	... ..	578
Stationary or Advancing	... ..	326
Dead	.. ..	116

These figures, large as they are, give but a poor idea of the amount of work entailed in the conduct of a Tuberculosis Dispensary. It must not be overlooked that the Dispensary, like the Sanatorium, is but a unit in a great scheme. Other units are shelter treatment, of which shelters, 230, are at present in use in Derbyshire (County Scheme), and the house visitation done by the Tuberculosis Nurse. No one of these units is an independent factor, but each one is inter-dependent upon the other.

(1) *The Dispensary* (1) Examines contacts.

(2) Supplies and selects cases suitable for Sanatorium or Isolation Hospital.

(3) Treats individual cases direct

(a) by Tuberculin ;

(b) by Medicinal means ;

(c) by Hygienic teaching ;

(d) by Operative measures and X-Rays.

(2) *The Tuberculosis Health Visitor.*

(a) Rounds up fresh cases, " contacts and suspects " for the Dispensary.

(b) Supervises home conditions and gives advice.

(c) Supervises " Shelters " and their method of use.

(d) Supervises the " after care " of all ex-Sanatoria and ex-Dispensary patients.

(3) *The Sanatorium.*

(1) Provides " observation " for cases requiring it.

(2) Treatment for all cases admitted,

(3) " Educational " facilities, *e.g.* Instruction in the cult of the " open-air " discipline in *cleanliness* and other matters.

(4) Instruction in the care of spit and the use of an open-air shelter. Raises the resistance of debilitated patients and enables the Dispensary Officer to " carry on " when patient returns home,

Of all these units the Dispensary is the only one which offers treatment and education to some patients during their entire life history (as patients). *Ambulant Cases*, who are able to attend the Dispensary and receive treatment there, often do very well, and many such cases have become “arrested” and are now working daily, despite the fact that they have *never been* in Sanatoria.

Tuberculin Treatment. The results as seen in Dispensary, ambulant treatment are on the whole *satisfactory*. Tuberculin, if given with care in carefully selected cases, has a decided influence in the treatment of tuberculosis, it raises the “resistance” of the patient (if there is any to begin with), and many cases show very great improvement under its careful administration, such as

- (a) gain in weight ;
- (b) increase in blood formation ;
- (c) arrest of symptoms ;
- (d) greater feeling of “ well-being.”

The best advertisement for tuberculin is that patients who have been under treatment at one time, frequently come back and ask for another course, as they “feel the want of it.”

THE BACTERIOLOGICAL EXAMINATION OF SPUTA.

The routine bacteriological examination of sputa for the presence of Tubercle Bacilli, of the patients in the Sanatorium is carried out at the Sanatorium. The following Table shews the number of specimens examined at the County Laboratory from the various Dispensaries :—

Dispensary.	Sputa.		Miscellaneous.		Total.	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Burton-on-Trent ..	7	19	..	..	7	19
Chesterfield	35	124	2	11	37	135
Chinley	19	40	..	1	19	41
Derby	33	53	9	20	42	73
Glossop	7	13	2	..	9	13
Ilkeston	16	50	..	3	16	53
Long Eaton	10	19	4	8	14	27
Matlock	11	28	..	1	11	29
Penmore Pavilion ..	36	21	1	1	37	22
Chesterfield Sanatorium	..	..	..	2	..	2
Totals	174	367	18	47	192	414

The total number of specimens submitted by medical practitioners in the County was 816 of which 185 were positive and 631 negative. The following is the number of specimens submitted from each Sanitary District :—

From the URBAN SANITARY DISTRICTS: Alferton, 22; Alvaston and Boulton, 2; Ashbourne, 31; Bakewell, 8; Baslow, 2; Belper, 21; Bolsover, 12; Bonsall, 4; Brampton and Walton, 4; Buxton, 31; Chesterfield (Borough), 64; Clay Cross, 8; Dronfield, 4; Fairfield, 9; Glossop (Borough), 22; Heage, 3; Heanor, 50; Ilkeston (Borough), 6; Long Eaton, 59; Matlock, 5; Matlock Bath, 2; New Mills, 20; North Darley, 4; Ripley, 17; South Darley, —; Swadlincote, 30; Whittington and Newbold, 5; Wirksworth, 21.

From the RURAL SANITARY DISTRICTS: Ashbourne, 28; Bakewell, 35; Basford, —; Belper, 16; Blackwell, 68; Chapel-en-le-Frith, 13; Chesterfield, 64; Clowne, 34; Glossop Dale, —; Hartshorne and Seals, 26; Hayfield, 11; Norton, —; Repton, 23; Shardlow, 29; Sudbury, 3.

It will be seen that from some of the districts the proportion of specimens submitted are altogether negligible. In this respect Ilkeston stands out in a very bad position—from this Borough with a population of 21,000, only six specimens were submitted during the year.

In the future when the facilities provided in the County Laboratory for the examination of sputa are more appreciated, I think we shall discover cases of Phthisis in an earlier stage, with more chance of effecting permanent benefit to the patients.

WORK DONE AT DISPENSARIES.

TABLE XIV.

	Burton.	Chesterfield	Chinley.	Derby.	Glossop.	Ilkeston.	Long Eaton.	Matlock.	Total.
CASES TREATED ..	105	505	283	244	70	196	101	140	1,644
Males ..	55	250	120	150	34	85	47	73	814
Females ..	50	255	163	94	36	111	54	67	830
Under 15 Years ..	58	201	176	125	12	120	68	56	816
Insured ..	50	172	50	93	16	26	28	53	488
STAGE OF DISEASE.									
Pulmonary Cases ..	89	283	204	145	63	52	43	101	980
Stage (Turban) I.	56	141	127	94	43	32	20	80	593
II.	21	98	53	35	13	12	17	15	264
III.	12	44	24	16	7	8	6	6	123
Sputum Examined	23	232	83	105	44	40	37	61	625
Positive ..	9	106	28	50	14	25	22	28	282
TREATMENT.									
Sanatorium ..	24	111	25	50	14	27	24	21	296
Tuberculin ..		217	191	105	35	65	21	42	676
RESULT.									
Disease arrested ..	13	41	11	25	9	15	12	13	139
Improved ..	53	147	131	65	25	55	52	50	578
Stationary ..	34	79	127	25	23	12	14	12	326
Dead ..	5	79	12	8	2	5	2	3	116
Still under Treatment	71	184	163	149	50	90	56	46	809
Working ..	23	146	121	125	40	70	35	22	582